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42. RELATIONSHIP BETWEEN PYRROLIZIDINE ALKALOIDS, DANAINE BUTTERFLIES AND *AGERATUM CONYZOIDES*

Ackery & Vanewright (1984) claimed that male butterflies need pyrrolizidine alkaloids in order to activate them sexually before a successful courtship. They further claimed that these males are attracted towards plants which contain these alkaloids in order to fulfil their demand. *Ageratum conyzoides* was claimed to be one such plant.

In a recent communication Larsen (1986) has further supported this view when he observed clusters of males on *Ageratum conyzoides* from various locations from Delhi. Larsen too concluded that this particular plant acts as a source of these alkaloids.

For a number of years we have been engaged in screening Indian Botanicals in search of new crop protection chemicals. Having acquired considerably literature on plants known for this activity we compiled the data on *Ageratum conyzoides* as this is well known to produce anti-juvenile hormones, i.e. precocenes I & II (Fagoonee *et al.* 1981). As reported by Darvas *et al.* (1986), precocenes induce reversible precocious metamorphism and sterilization of insects by suppressing the function of the corpora allata glands. This data clearly showed that no alkaloid has either been isolated or otherwise claimed to be present in this species. On the other hand a number of oxygen heterocycles have been reported from this plant.

In order to further confirm the presence or absence of alkaloids in *Ageratum conyzoides*, we separately extracted the flowers and remaining plant with cold petroleum ether followed by cold methanol (Room temperature, 24 hours). After removal of solvents when these extracts were treated with Mayer's or Dragendorf's reagents as these are well known to show diagnostic colour reactions with alkaloids, no such coloration was observed thereby indicating absence of alkaloids.

Keeping this observation in view, it appears that the reasons of attraction of male Danaines towards *Ageratum conyzoides* is not the presence of alkaloids but some other unknown factors.

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43. NOTES ON THE DISTRIBUTION OF RARE AND LITTLE KNOWN *TANACETUM NUBIGENUM* WALL. EX DC. (ASTERACEAE) FROM NORTHWEST HIMALAYA

(*With a text-figure*)

During germplasm exploration and collection trip to Garbyang (*en route* Mansarovar Kailash), district Pithoragarh, in October, 1986 we collected a rare and interesting medicinal and aromatic plant from the interior grassy localities, stone slopes, and sandy soils in the rather arid areas of Garbyang, predominantly a tribal area (63 km away from Tawaghat, last bus terminus), surrounded by mountains, gorges, and valleys with alpine vegetation. The species was identified as *Tanacetum nubigenum* Wall. ex DC. (Asteraceae).

This plant has been reported from Pindari Glacier, Kuti Valley, Byans valley (Almora and Pithoragarh districts); Tungnath, Vashudhara, Tapovan, Chamba, Gangotri (Chamoli, Uttarkashi and Tehri districts); Shetiker-Spiti, Thali Bazar (Himachal Pradesh) areas. The presence of this species in Garbyang area hence forms a new distributional record for North-West Himalaya. Seeds have been collected and the plant specimen has been preserved by the authors at N.B.P.G.R., Regional Station-Bhowali Herbarium (N.B.P.G.R.H. - 130).

Tanacetum nubigenum Wall. ex DC. Prodr. 4: 130, 1836; Hook. f. FBI 3: 378-379, 1881; Atkinson, 508-509, 1882; Collett, 265, 1902; Duthie, 92, 1906. (Fig. 1).

Erect, woolly, aromatic, 30-45 cm tall, perennial herb. Stems many, arising from a woody base, often branched and rooting at the base. Leaves sessile, alternate, 3-pinnatisect, 1.2-4.0 × 0.1-0.3 cm; segments linear-lanceolate, subacute, entire, glabrous or appressed, hairy on both surfaces. Heads discoid, many-peduncled or sessile, 3-5 mm in diameter, in terminal corymbs. Involucral bracts broadly oblong, many erect, woolly haired, margins scarious, purple-brown, outermost linear. Corolla or disk-florets 2-5 mm long, 5-ribbed, bright yellow. Achenes smooth, ovoid-oblong. Receptacle slightly convex; pappus none.

Flowering and Fruiting: July-October.

Reference No.: National Bureau of Plant Genetic Resources, Bhowali Herbarium (N.B.P.G.R.H. - 130 — K.S.N. & K.C.P.).

Note: Easily distinguishable from other species of *Tanacetum*, having taller stems 30-45 cm, smaller flower heads, 3-5 mm in diameter, and leaves tripinnatisect, linear,